Lockheed Martin Scientific, Engineering, Response and Analytical Services 2890 Woodbridge Ave, Building 209 Annex Edison, NJ 08837-3679

Telephone: 732-321-4200 Facsimile: 732-494-4021

DATE:

4 March 2011

TO:

Greg Powell, U.S. EPA/ERT Work Assignment Manager

THROUGH:

Dennis Miller, SERAS Program Manager

FROM:

Philip Solinski, SERAS Task Leader

SUBJECT:

FORMER MANUFACTURED GAS PLANT SITE, WEST PALM BEACH, FL.

WORK ASSIGNMENT #SER00113 - TRIP REPORT

#### BACKGROUND

The Former Manufactured Gas Plant Site (SITE) located at 209 2<sup>nd</sup> Street, West Palm Beach, FL, has been under investigation by the EPA and the State of Florida for several years. These investigations indicated that volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), total residual petroleum hydrocarbons (TRPH) and inorganic compounds were present due to historical activities. In 1991, the Florida Public Utilities Company (FPUC) and the State of Florida agreed to a consent order (Case number 90-1618) to address impacts from the facility. The Site is not on the National Priorities List (NPL). In 2009, a Feasibility Study (FS) documented benzene, toluene, ethylbenzene, m,p,o-xylenes (BTEX), PAHs, TRPH and metals in groundwater monitoring wells. Scientific, Engineering, Response and Analytical Services (SERAS) personnel collected soil gas samples in the vicinity of the site in order to delineate a plume. Initial samples were collected in Tedlar® bags and analyzed on-site by gas chromatography/mass spectrometry (GC/MS) for BTEX. Based on availability and site access, two sub-slab sampling probes were installed and sampled using Tedlar® bags for on-site BTEX analysis. In addition, SUMMA® canister samples were collected from the sub-slab probes as well as crawl space locations. These samples were shipped to a fixed laboratory for analysis of BTEX and Naphthalene.

#### OBSERVATIONS AND ACTIVITIES

#### Soil Gas Sampling Locations

At the request of the Environmental Protection Agency's Environmental Response Team (EPA/ERT), SERAS mobilized to the Site on 24 January 2011 to perform the sampling.

The area of interest included, the suspected source of the contamination and the area where the groundwater was impacted. The two block area of interest near the former manufactured gas site was roughly gridded. Twenty locations (SG-1 through SG-20) were selected for sampling during this soil gas study. The suspected source area (a vacant property) was sampled at two locations (SG-1 and SG-2). Another vacant property also had sampling performed at two locations (SG-3 and SG-4). The remaining 16 locations were sampled in the area of suspected groundwater contamination. These 16 collection points were located on the right-of-way areas on the street side or within the alley between the streets. Figure 1 depicts all of the sample locations.

Soil gas sampling was performed through the use of a slam bar, insertion a of stainless steel rod, connection of polytetrafluoroethylene (PTFE) tubing from the rod through a vacuum box to a one-liter (1-L) Tedlar® bag. The air

SERAS113-DTR-030411

rate set at 1-L per minute, sample collection was completed within one minute.

#### **Sub-slab Soil Gas Well Installation**

Based on availability and site access, two sub-slab sampling probes were installed in residential living areas (Unit 815-1 SS and Unit 815-3 SS) near the suspected source area. As each of the residential locations were on slabs, the soil gas wells were installed at locations deemed clear of utilities and out of daily view for aesthetic purposes. These locations were chosen in consultation with the ERT Work Assignment Manager (WAM). Wells were installed flush with the slab and capped with a Teflon® fitting that was removed during sampling operations. Wells were installed in accordance with SERAS Standard Operating Procedure (SOP) #2082, Construction and Installation of Permanent Sub-Slab Soil Gas Wells. SERAS personnel collected 24-hour soil gas samples from the two locations using a 6-L SUMMA® canister in accordance with SERAS SOP #1704, SUMMA® Canister Sampling.

#### Crawl Space and Ambient Air SUMMA® Sampling

Based on availability and site access, three crawl space air samples were collected from below Units 309, 312 and 805 near the suspected source area. In an effort to minimize influence of ambient air, each of the crawl space samples were deployed through foundation access panels with the use of a telescoping boat hook. Each sample was placed in as far as possible from the access panel. Two ambient air samples were also collected from the front porch of Unit 309. SERAS personnel collected 24-hour soil gas samples from each of the locations using a 6-L SUMMA® canister in accordance with SERAS SOP #1704, SUMMA® Canister Sampling.

#### **Tedlar®** Sampling and Analysis

A total of 32 air samples (30 soil gas samples and two ambient air samples) were collected in Tedlar® bags and analyzed on-site by SERAS personnel on 25 and 26 January 2011. On 25 January 2011, two samples were collected from locations SG-1 through SG-4. In addition, one sample was collected from locations SG-5 through SG-20. On 26 January 2011, an additional sample was collected from SG-1, SG-2, SG-11 and SG-12. Tedlar® bag soil gas samples were also collected from residential locations Unit 815-1 SS and Unit 815-3 SS. One ambient air sample was collected on each day of sampling.

On-site analysis was performed in accordance with SERAS Draft SOP #1741, *Field Analysis of VOCs in Gaseous Phase Samples by GC/MS Loop Injection.* All analytical data were verified per screening data (SD) requirements.

An Agilent®7890 gas chromatograph and 5975C Triple Axis mass spectrometer (GC/MS) were used to perform on-site VOC analysis on sub-slab soil gas samples collected in 1-L Tedlar® bags. Five compounds comprised the target compound list (TCL): benzene, toluene, ethyl benzene, m,p-xylenes and o-xylene. The report entitled *GC/MS Analytical Report, Former Manufactured Gas Plant Site, West Palm Beach, Florida from February 2011*, was prepared by SERAS and submitted previously.

#### **SUMMA® Canister Sampling and Analysis**

A total of eight samples (two sub-slab, three crawl space, two ambient air and one trip blank) were collected during the 24-hour sampling period. Each sample yielded a 4 to 5-L time-weighted average (TWA) per sample. All samples collected in SUMMA® canisters were properly documented. Samples were shipped to Columbia Analytical Services for VOC analysis. All locations were noted on aerial photographs.

Analysis of the sub-slab soil gas, crawl space and ambient air samples was performed in accordance with modified EPA Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*. The TCL included benzene, toluene, ethylbenzene, m,p,-xylenes, o-xylene and naphthalene. Results were reported in both parts per billion by volume (ppbv) and micrograms per cubic meter ( $\mu$ g/m³).

#### **RESULTS**

#### Tedlar® Bag Sampling

A summary of Tedlar® bag sampling results and reporting limit values for the samples collected in January 2011 can be found in Table 1. Benzene was detected at nine of the 20 soil gas locations ranging from 0.58 ppbv at SG-2 to 4.4 ppbv at SG-11. Toluene was detected at 12 of the 20 soil gas locations ranging from 0.51 ppbv at SG-13 to 3.7 ppbv at SG-11. Ethylbenzene, m,p-xylene and o-xylene were not detected above the reporting limit at any of the soil gas locations.

None of the target compounds were detected above the reporting limit in the samples collected from the residential units (Unit 815-1 SS and Unit 815-3 SS).

#### **SUMMA® Canister Sampling**

A summary of SUMMA® canister results and reporting limit values for the samples collected in January 2011 can be found in Table 2.

In the ambient and crawl space samples, benzene ranged from 0.16 ppbv at Unit 805 CS to 0.21 ppbv in both ambient samples. In those same samples toluene ranged from 0.23 ppbv at Unit 805 CS to 0.30 ppbv in Unit 309 Ambient 1 and Unit 309 CS. Ethylbenzene ranged from 0.041 ppbv at Unit 309 CS to 0.054 ppbv at Unit 312 CS. The concentration of m,p-xylene ranged from 0.10 ppbv at Unit 805 CS to 0.17 ppbv at Unit 312 CS. The o-xylene concentration ranged from 0.041 ppbv at Unit 805 CS to 0.066 ppbv at Unit 312 CS. Naphthalene ranged from 0.045 ppbv at Unit 309 CS to 0.083 ppbv at Unit 309 Ambient 1.

Benzene in the sub-slab samples was lower than the results in the ambient and crawl space samples at 0.093 ppbv at Unit 815 - 3 SS. The maximum sub-slab toluene concentration of 0.23 ppbv was within the range of the ambient and crawl space samples at Unit 815 - 3 SS. The maximum ethylbenzene, m,p-xylene and o-xylene concentrations of 0.12 ppbv, 0.30 ppbv and 0.10 ppbv, respectively, were above the range of the ambient and crawl space samples at Unit 815 - 3 SS. For naphthalene both samples collected from the sub-slab 1.5 ppbv at Unit 815 - 1 SS and 0.13 ppbv at Unit 815 - 3 SS were both above the range of the ambient and crawl space samples.

Appendix A contains the SERAS Tedlar® Bag Sampling Worksheets, Appendix B contains the SERAS SUMMA® Sampling Worksheets, and Appendix C contains the VOC SUMMA® Analytical Report.

#### **FUTURE ACTIVITIES**

Future activities will be determined by ERT and Region IV personnel.

cc: Central File WA SER00113 (w/attachments)

Electronic File: I:/Archive/SERAS/0113/D/TR/03/04/11 Dennis Miller, SERAS Program Manager (cover page only)

Table 1
Tedlar® Bag Sampling Results in ppbv
Former Manufactured Gas Plant Site
West Palm Beach, Florida
March 2011

Samp_No	Sub Location	Location	Date	Time	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
43757	Ambient	820 2nd St	1/25/2011	9:21	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43788	Ambient	815/809 2nd Courtyard	1/26/2011	15:51	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43758	SG-1	820 2nd St - North side	1/25/2011	9:25	1.5	1.4	0.50 U	0.50 U	0.25 U
43764	SG-1b	820 2nd St - North side	1/25/2011	10:24	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43782	SG-1	820 2nd St - North side	1/26/2011	9:30	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43759	SG-2	820 2nd St - South side	1/25/2011	9:33	0.58	0.50 U	0.50 U	0.50 U	0.25 U
43765	SG-2b	820 2nd St - South side	1/25/2011	10:32	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43760	SG-3a	816 3rd St - Mid property under tree	1/25/2011	9:53	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43761	SG-3b	816 3rd St - Mid property under tree	1/25/2011	9:56	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43762	SG-4a	816 3rd St - North side	1/25/2011	10:14	1.9	2.5	0.50 U	0.50 U	0.25 U
43763	SG-4b	816 3rd St - North side	1/25/2011	10:18	0.9	1.3	0.50 U	0.50 U	0.25 U
43783	SG-4	816 3rd St - North side	1/26/2011	9:36	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43766	SG-5	803 2nd St	1/25/2011	13:23	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43767	SG-6	Between 815 & 817 2nd St	1/25/2011	13:34	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43768	SG-7	821 2nd St	1/25/2011	13:43	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43769	SG-8	NW Corner of Division and 2nd	1/25/2011	13:53	0.50 U	0.64	0.50 U	0.50 U	0.25 U
43770	SG-9	309 Division Ave	1/25/2011	14:01	0.50 U	0.62	0.50 U	0.50 U	0.25 U
43771	SG-10	Alley next to 312 Division	1/25/2011	14:08	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43772	SG-11	Median in front of 719 3rd St	1/25/2011	14:16	4.4	3.7	0.50 U	0.50 U	0.25 U
43785	SG-11	Median in front of 719 3rd St	1/26/2011	9:44	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43773	SG-12	SE corner of 3rd & Division	1/25/2011	14:24	1.4	1.4	0.50 U	0.50 U	0.25 U
43784	SG-12	SE corner of 3rd & Division	1/26/2011	9:40	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43774	SG-13	Backcorner of Church on 3rd St	1/25/2011	14:30	0.50 U	0.51	0.50 U	0.50 U	0.25 U
43775	SG-14	Median near 708 3rd	1/25/2011	14:37	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43776	SG-15	806 3rd St median	1/25/2011	14:46	0.64	0.96	0.50 U	0.50 U	0.25 U

ppbv- parts per billion by volume.

a - first sample collected from the location.

b - second sample collected from the location.

U - indicates that the compound was not detected above the reporting limit listed.

Table 1
Tedlar® Bag Sampling Results in ppbv
Former Manufactured Gas Plant Site
West Palm Beach, Florida
March 2011

Samp_No	Sub Location	Location	Date	Time	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene
43777	SG-16	Median btwn 810 & 816 3rd St	1/25/2011	14:52	0.70	0.92	0.50 U	0.50 U	0.25 U
43778	SG-17	824 3rd St Median	1/25/2011	15:03	0.79	1.2	0.50 U	0.50 U	0.25 U
43779	SG-18	824 3rd St Alley	1/25/2011	15:17	0.64	0.89	0.50 U	0.50 U	0.25 U
43780	SG-19	816 3rd St Alley	1/25/2011	15:25	0.50 U	0.69	0.50 U	0.50 U	0.25 U
43781	SG-20	806 3rd St Alley	1/25/2011	15:35	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43786	Unit 815-1 SS	815 2nd St Apt 1	1/26/2011	15:37	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U
43787	Unit 815-3 SS	815 2nd St Apt 3	1/26/2011	15:46	0.50 U	0.50 U	0.50 U	0.50 U	0.25 U

ppbv- parts per billion by volume.

U - indicates that the compound was not detected above the reporting limit listed.

a - first sample collected from the location.

b - second sample collected from the location.

Table 2
SUMMA® Canister Sampling Results in ppbv
Former Manufactured Gas Plant Site
West Palm Beach, Florida
March 2011

Sample	Sub Location	Location	Date	Time	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylene	Naphthalene
1471	Unit 815 - 1 SS	815 2nd St Apt 1	1/27/2011	15:39	0.037 U	0.068	0.036 U	0.054	0.036 U	1.5
1472	Unit 815 - 3 SS	815 2nd St Apt 3	1/27/2011	16:26	0.093	0.23	0.12	0.30	0.10	0.13
1473	Unit 309 Ambient 1	309 Division Ave	1/27/2011	16:03	0.21	0.30	0.044	0.14	0.052	0.083
1474	Unit 309 Ambient 2	309 Division Ave	1/27/2011	16:03	0.21	0.26	0.042	0.13	0.052	0.076
1475	Unit 309 CS	309 Division Ave	1/27/2011	16:07	0.19	0.30	0.041	0.12	0.047	0.045
1476	Unit 312 CS	312 Division Ave	1/27/2011	16:13	0.17	0.25	0.054	0.17	0.066	0.071
1477	Unit 805 CS	805 3rd St	1/27/2011	16:17	0.16	0.23	0.035 U	0.10	0.041	0.029 U
1478	Trip Blank	Trip Blank	1/27/2011	16:31	0.023 U	0.027 U	0.023 U	0.023 U	0.023 U	0.019 U

ppbv- parts per billion by volume.

U - indicates that the compound was not detected above the reporting limit listed.

SS - Sub-slab.

CS - Crawl space.







- Soil Gas with Tedlar Bag and Summa Canister Analysis
- Crawl Space Air Summa Canister
- Summa Canister Ambient Location
- Tedlar Bag Ambient Location

U.S. EPA Environmental Response Team Scientific Engineering Response Analytical Service EP-W-09-031 W.A.# 0-113 Figure 1
Sampling Locations
Former Manufactured Gas Plant Site
West Palm Beach, Florida

# APPENDIX A SERAS Tedlar® Bag Sampling Worksheets Former Manufactured Gas Plant Site West Palm Beach, FL March 2011



#### **Tedlar Bag Sampling Worksheet**

Site:	<u>Former</u>	Manufactured	Gas Plan	t Vapor	Intrusion	Site

WA# 0-113 Pouten

Sampler: Socraful WEEKS

Date: 1/25/14

U.S. EPA/ERT WAM: Newhart

SERAS Task Leader: Solinski

1				
Location	Sub Location	Time	Tedlar Bag Analysis/Method	Volume (Liters)
820 2mg St	AMBIENT	921	BTEX	1
820 2ND ST	56-1 NOUTH SIDE	925	BIEX	1
820 ZND ST	S6-2 (Sam 310)	933	RITEL	j
8/6 320 ST	5G-3(MID UNDER)	953		1
816 300 51	SG3 (West ma)	956		1
816 3mg st	SG-40 (NORM)	1814		1
816 3 ns St	SG-46 ( MONTH)			)
	SG-16 (200 Brus)			1
820 2mm ST	5G - 26 (200 pm	2.		1.
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	820 2mg St 820 2mg St 820 2mg St 816 3agst 816 3agst 816 3agst 816 3agst 816 3agst 816 3agst 816 3agst	820 2ng St AMBIENT 820 2ng ST SG-1 / NOUNTSIDE 820 2ng ST SG-2 (S2M 310) 816 3ng ST SG-3 (MID UNDER) 816 3ng ST SG-4 (NOUNT) 816 3ng ST SG-4 (NOUNT) 816 3ng ST SG-4 (NOUNT) 816 3ng ST SG-4 (NOUNT) 820 2no ST SG-16 (2m BM)	820 2mp St Ambient 921 820 2mp St SG-1 / NORTH STOP 925 820 2mp St SG-2 ( Sam 3100 933 816 3mp St SG-36 ( Marrier) mis 956 816 3mp St SG-4a ( Month ) 1014 816 3mp St SG-4a ( Month ) 1018 820 2mp St SG-16 ( Month ) 1018	\$20 2mg St Ambient 921 BIEX  \$20 2mg St SG-1 / NOWHER 921 BIEX  \$20 2mg St SG-1 / NOWHER 925 BIEX  \$20 2mg St SG-2 (\$2m 3100 933 BIEX  \$16 3mg St SG-3 (mio under 956 BIEX  \$16 3mg St SG-3 (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX  \$16 3mg St SG-4a (North 2) mio 956 BIEX

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#### **Tedlar Bag Sampling Worksheet**

Site:	Former	Manufactured	Gas Plant	Vapor	Intrusion Site

WA# <u>0-113</u>

Sampler: Soursur/WEERS

Date: 1/25/11

Powert U.S. EPA/ERT WAM: Newhartps

SERAS Task Leader: Solinski

Sample #	Location	Sub Location	Time	Tedlar Bag Analysis/Method	Volume (Liters)
43766	803 2ND ST	SG-SILIBAT MEET IN	1323	BIEX	Í
43767	BETTUTED 815 +817	SG-6 (ATEMO O)	1334	BTEX	ı
43768	821 2m Si	SG-7 BETWEEN MAN	1343	BIEX	j
. 43769	GOZNER (NW) 2ND ST +DIVISION	SG-8 (MSDIAN)(1)	1353	SIEX	1
43770	IN FRONT OF JOG DIVISION	SG-9 MEDIAN (2)	1401	BTEX	1
43771	ALL MEXT TO WEST 312 DIVIGION- FEST MEDIAN IN FROM OF THE	SG - 10 (SOUTH )(2)	1408	BIEX	1
43772	MEDIAN IN FROM OF CH	SG-11 MEDIAN)	1416	Brex	ĺ
43773	NW SE CORNER 3RD +	56-12 MEDIAN	1424	BIEX	1
43774	CHURCH ALONG BROM	or - mon a		BITEX	1
43775	PARK WEAR 708	55-14 MEDIAN (2)	1437	BTEX	1
43776	806 320 ST	9-15 MEDILIN(2)	1446	3EX	/
43777	MEDIAN BETWEEN 8/0+816 3RD ST	36-16 MEDIAN(2)	1452	BIEX	/
43778	824 SRO ST	SG-17 mEDAN(2)	1503	BTEX	/
43779	524 3ng st	56-18 AWEY (2)	1577	BIEX	,
43780	816 320ST AUGS	59-19 August(2)	1525	BTEX	

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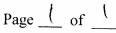
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Page Z of Z

#### **Tedlar Bag Sampling Worksheet**

	anufactured Gas Plant Va	por Intrus	sion Site		WA# <u>(</u>	<u>)-113</u>
Sampler: Soci	s/"			U.S. I	EPA/ERT WAM: New	whart ps
Date: (/2	5/11			SEF	RAS Task Leader: <u>Sol</u>	<u>inski</u>
Sample #	Location	Sı	ub Location	Time	Tedlar Bag Analysis/Method	Volume (Liters)
43781	86 300 ST AWEY	SG-1	20 sury	1535	Brex	1
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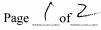




#### **Tedlar Bag Sampling Worksheet**

Site: Former Ma	anufactured Gas Plant Va	sion Site	WA# <u>0-113</u> Poueu				
Sampler: Soc.	near / weeks			U.S. EPA/ERT WAM: Newhart			
Date: 1/26	111			SER	AS Task Leader: <u>Sol</u>	<u>inski</u>	
Sample #	Location	Su	ub Location	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
- 43782	820 2ND ST	<i>S</i> G-	- 1	930	BIEV	(	
43783	8/6 3 RD ST	56-	.4	936	BTEX	/	
43784	COMER OF DIVISION + 3 RD ST DIVISITY BY CHUNCH	Sch-	-12	940	BIEX	1	
43785	ALBOSS FROM 315 DIVISION	56-	- (1	944	BTEX	/	
43786 _	815 2ND STUNIT	UNITE	315-1 55	15-37	B TEX	)	
43787	915 2ND ST APT 3	UNIT	815-35	1546	BIEX	1	
43788	815/809 (outstans	Am	BIENT	1551	BIEX	/	
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Comments:				······································			
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# APPENDIX B SERAS SUMMA® Sampling Worksheets Former Manufactured Gas Plant Site West Palm Beach, FL March 2011







#### **SUMMA Air Sampling Work Sheet**

Site: Former Manufactured Gas Plant Vapor Intrusion Site

WA# <u>0-113</u>

Sampler: Solinski/Weeks

U.S. EPA/ERT WAM: Powell

Date: 1/26/11 - 1/27/4

SERAS Task Leader: Solinski

Sample #	01471	01472	01473	01474	01475
Location	8,52NOST APT 1	818 200 35 Apr 3 UNIT	309 DVISION	309 DIVISON	301 DIVISION
Sub-Location	BN17 815-155	515-335	AMBIENT 1	AMBIENT Z	309 05
Analysis/Method	7015 BA	EX + NAPH	THIENE		<b>-&gt;</b>
Summa #	AC01312	A01502	Aco 1553	Mo 1053	ACO1719
Orifice ID	FC00572	F105492	FW302	FC00552	Fcw 576
Start Pressure	- 30	*-30	30	-30	- 30
Flow Rate (Start)	-3,2	-3.7	-3.4	-3.2	-3.4
Flow meter	12754	<			
Time/Counter (Start)	1540	1547	1804	1604	1604
Time/Counter (Stop)	1539	1626	1603	1603	1607
End Pressure	47	-4	- 3	-4	_ Z
Sample Volume	4,6-29	5.2	5.4	5.2	5.6

MET Station on Site?: Y/N





#### **SUMMA Air Sampling Work Sheet**

Site: Former Manufactured Gas Plant Vapor Intrusion Site

WA# <u>0-113</u>

 ${\tt Sampler:} \ \underline{Solinski/Weeks}$ 

U.S. EPA/ERT WAM: Powell

Date: 1/26/11-1/27/11

SERAS Task Leader: Solinski

Sample #	01476	01477	01478		
Location	312 DIVISION	chour sent	TRIPBLANK	1	
Sub-Location	312 CS	605 (S	TRIP BLANK		
Analysis/Method	1015 B	TEX + NAPALTA	HENE		
Summa #	401722	Ac01047	AC00731		4
Orifice ID	FC00440	FC00544	NA		
Start Pressure	- 30	-30	- 30		
Flow Rate (Start)	~3.1	-3.1	₩. dalagara		
Flow meter	12754 -		_		
Time/Counter (Start)	1612	(623	1631		
Time/Counter (Stop)	1,13	1617	1631		and the same of th
End Pressure	-3	-3	- 30		\
Sample Volume	5.4	5.4	0 /		\\

MET	Station	on	Site?:	Y/N	

#### APPENDIX C VOC SUMMA® Analytical Report Former Manufactured Gas Plant Site West Palm Beach, FL March 2011

#### ANALYTICAL REPORT

#### Prepared by Lockheed Martin Information Systems and Global Services/Environmental Services Scientific, Engineering, Response and Analytical Services

Former Manufactured Gas Plant W. Palm Beach, Florida

February 2011

EPA Work Assignment No. SERAS-113 LOCKHEED MARTIN Work Order SER00113 EPA Contract No. EP-W-09-031

> Submitted to G. Powell **EPA-ERT** 26 W. Martin Luther King Drive Cincinnati, Ohio 45268

Kansa Analytical Support Leader

Analysis by: Columbia

**Analytical Services** 

D. Killeen

Prepared by: Y. Mehra

QA/QC Offider

D. Miller

Date

Validated by: R. Varsolona

Program Manager





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Correspondence Chain of Custody

#### **Appendices**

Appendix A Data for VOC in Air W 038

Appendix A will be furnished on request.





Environmental Response Team/Scientific Engineering, Response and Analytical Services 2890 Woodbridge Avenue, Building 209 Annex Woodbridge NJ 08837



#### TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air (EPA Method TO-15)

Columbia Analytical Services 2655 Park Center Drive Suite A Simi Valley, CA 93065

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

Columbia Analytical Services is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # CA009 for VOC analysis in air by TO-15.





Environmental Response Team/Scientific Engineering, Response and Analytical Services 2890 Woodbridge Avenue, Building 209 Annex Woodbridge NJ 08837



#### **Detailed Sample Information**

CAS Sample #	Field Sample #
P1100363-1	1471
P1100363-2	1472
P1100363-3	1473
P1100363-4	1474
P1100363-5	1475
P1100363-6	1476
P1100363-7	1477
P1100363-8	1478



#### Introduction

SERAS personnel, in response to WA# SERAS-113, provided analytical support for environmental samples collected from the Former Manufactured Gas Plant, West Palm Beach, Florida, as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
0-113-01/27/11-0002	2	01/27/11	01/28/11	02/05/11	Soil Gas	VOC / EPA Method TO-15	Columbia	W 038
	2				Air	Method 10-13	Analytical Services	
0-113-01/27/11-0003	3						Services	
	1				Trip Blank			

#### **Case Narrative**

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods as stated in the QAPP. The laboratory reported the data to two significant figures. Any other representation of the data is the responsibility of the user. All data validation flags have been inserted into the results tables. At the request of the Work Assignment Manager, the laboratory reported results for six aromatic compounds.

#### VOCs in Air Package W 038

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.





REPORT OF LABORATORY ANALYSIS



#### **Summary of Abbreviations**

C Centigrade

CLP Contract Laboratory Program

COC Chain of Custody conc concentration cont continued

CRDL Contract Required Detection Limit
CRQL Contract Required Quantitation Limit

D (Surrogate Table) value is from a diluted sample and was not calculated

Dioxin Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)

DFTPP Decafluorotriphenylphosphine

EMPC Estimated maximum possible concentration GC/MS Gas Chromatography/ Mass Spectrometry

IS Internal Standard

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate
MDA Minimum Detectable Activity
MS (BS) Matrix Spike (Blank Spike)

MSD (BSD) Matrix Spike Duplicate (Blank Spike Duplicate)

MW Molecular Weight

NA Not Applicable or Not Available NAD Normalized Absolute Difference

NC Not Calculated

NR Not Requested/Not Reported

NS Not Spiked
% D Percent Difference
% REC Percent Recovery

SOP Standard Operating Procedure ppbv parts per billion by volume

ppm parts per million
pptv parts per trillion by volume
PQL Practical Quantitation Limit
PAL Performance Acceptance Limit
QA/QC Quality Assurance/Quality Control

QL Quantitation Limit RL Reporting Limit

RPD Relative Percent Difference RSD Relative Standard Deviation

SERAS Scientific, Engineering, Response and Analytical Services

SIM Selected Ion Monitoring

Sur Surrogate

TIC Tentatively Identified Compound

TCLP Toxicity Characteristic Leaching Procedure

VOC Volatile Organic Compound

Value exceeds the acceptable QC limits

$m^3$	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	S	sigma

#### Data Validation Flags

J	Value is estimated	R	Value is unusable
Ī+	Value is estimated high (metals only)	ŢŢ	Not detected

J- Value is estimated low (metals only) UJ Not detected and RL is estimated

N Presumptively present (Aroclors only)

Rev. 1/14/09

REPORT OF LABORATORY ANALYSIS





## Table 1.1a Results of the Analysis for VOC (ppbv) in Air WA # SERAS-113 Former Manufactured Gas Plant

Method: TO-15 SIM Page 1 of 1

CAS Sample No. Sample Number Sample Location Sublocation	2/5/2 Method	2011 d Blank		71 5 - 1 SS		72 5 - 3 SS	14 Unit 309	73 Ambient 1		74 Ambient 2
Analyte	Result ppbv	RL ppbv	Result ppbv	RL ppbv	Result ppbv	RL ppbv	Result ppbv	RL ppbv	Result ppbv	RL ppbv
Benzene	U	0.023	U	0.037	0.093	0.037	0.21	0.035	0.21	0.036
Toluene	U	0.027	0.068	0.042	0.23	0.041	0.30	0.040	0.26	0.041
Ethylbenzene	U	0.023	U	0.036	0.12	0.036	0.044	0.035	0.042	0.035
m,p-Xylenes	U	0.023	0.054	0.036	0.30	0.036	0.14	0.035	0.13	0.035
o-Xylene	U	0.023	U	0.036	0.10	0.036	0.052	0.035	0.052	0.035
Naphthalene	U	0.019	1.5	0.030	0.13	0.030	0.083	0.029	0.076	0.029

Table 1.1a (cont) Results of the Analysis for VOC (ppbv) in Air WA # SERAS-113 Former Manufactured Gas Plant

Method: TO-15 SIM

CAS Sample No. Sample Number Sample Location Sublocation		75 09 CS		76 12 CS		77 05 CS		78 Blank
Analyte	Result ppbv	RL ppbv						
Benzene	0.19	0.034	0.17	0.036	0.16	0.036	U	0.023
Toluene	0.30	0.038	0.25	0.041	0.23	0.040	U	0.027
Ethylbenzene	0.041	0.033	0.054	0.035	U	0.035	U	0.023
m,p-Xylenes	0.12	0.033	0.17	0.035	0.10	0.035	U	0.023
o-Xylene	0.047	0.033	0.066	0.035	0.041	0.035	U	0.023
Naphthalene	0.045	0.027	0.071	0.029	U	0.029	U	0.019

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### Table 1.1b Results of the Analysis for VOC ( $\mu g/m^3$ ) in Air WA # SERAS-113 Former Manufactured Gas Plant

Method: TO-15 SIM Page 1 of 1

CAS Sample No. Sample Number Sample Location Sublocation	2/5/2 Method	2011 d Blank	1471 Unit 815 - 1 SS		1472 Unit 815 - 3 SS		1473 Unit 309 Ambient 1		1474 Unit 309 Ambient 2	
Analyte	Result µg/m³	RL μg/m³	Result μg/m³	RL μg/m³	Result μg/m³	RL μg/m³	Result μg/m³	RL μg/m³	Result µg/m³	RL μg/m³
Benzene Toluene Ethylbenzene m,p-Xylenes o-Xylene	U U U U	0.075 0.10 0.10 0.10 0.10	U 0.26 U 0.23	0.12 0.16 0.16 0.16 0.16	0.30 0.86 0.50 1.3 0.45	0.12 0.16 0.16 0.16 0.16	0.67 1.1 0.19 0.59 0.23	0.11 0.15 0.15 0.15 0.15	0.66 0.99 0.18 0.58 0.23	0.12 0.15 0.15 0.15
Naphthalene	U	0.10	8.1	0.16	0.66	0.16	0.44	0.15	0.40	0.15

### Table 1.1b (cont) Results of the Analysis for VOC $(\mu g/m^3)$ in Air WA # SERAS-113 Former Manufactured Gas Plant

Method: TO-15 SIM

CAS Sample No. Sample Number Sample Location Sublocation	14 Unit 30			76 12 CS	14 Unit 8	77 05 CS		78 Blank
Analyte	Result µg/m³	RL μg/m³	Result µg/m³	RL μg/m³	Result μg/m³	RL μg/m³	Result µg/m³	RL μg/m³
Benzene	0.60	0.11	0.54	0.11	0.52	0.11	U	0.075
Toluene	1.1	0.14	0.94	0.15	0.87	0.15	U	0.10
Ethylbenzene	0.18	0.14	0.24	0.15	U	0.15	U	0.10
m,p-Xylenes	0.52	0.14	0.72	0.15	0.45	0.15	U	0.10
o-Xylene	0.20	0.14	0.29	0.15	0.18	0.15	U	0.10
Naphthalene	0.24	0.14	0.37	0.15	U	0.15	U	0.10

SERAS-0113-DAR-022511



## Table 2.1 Results of the LCS Analysis for VOC in Air WA # SERAS-113 Former Manufactured Gas Plant

Page 1 of 1

LCS: 02/05/11

Analyte	LCS Spike Added ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Danzana	4.05	4.40	0.4	25 420
Benzene	1.35	1.13	84	35 - 129
Toluene	1.16	1.02	88	56 - 129
Ethylbenzene	0.986	0.817	83	61 - 129
m,p-Xylenes	1.95	1.65	85	60 - 129
o-Xylene	0.967	0.831	86	62 - 134
Naphthalene	0.840	0.723	86	21 - 136





## Table 2.2 Results of the Duplicate Analysis for VOC in Air WA # SERAS-113 Former Manufactured Gas Plant

Page 1 of 1

Sample Number 1471

Analyte	Initial Analysis Results ppbv	Duplicate Analysis Results ppbv	RPD	QC Limit RPD≤*
6			NO	
Benzene	U	U	NC	25
Toluene	0.0681	0.0674	1	25
Ethylbenzene	U	U	NC	25
m,p-Xylenes	0.0537	0.0506	6	25
o-Xylene	U	U	NC	25
Naphthalene	1.54	1.54	0	25



Lockheed Martin
Scientific Engineering Response and Analytical Services
2890 Woodbridge Avenue Building 209
Edison, NJ 08837-3679
Telephone 732-321-4200 Facsimile 732-494-4021



Columbia Analytical Inc. 2655 Park Center Drive Suite A Simi Valley, CA 93065 805-526-7161 x 234

Attn: Kate Aguilera

January 14, 2010

As per Lockheed Martin / SERAS purchase order 7100069306 against Value Contract 46033392 for Project 0-113, please analyze samples according to the following parameters:

Analysis/Method	Matrix	# of samples
VOA/TO-15 0.030 ppbv See attached list	Summa -air	25

The samples are expected to arrive at your laboratory on or about January 28<sup>th</sup>, 2010. All applicable QA/QC (eg: BS/BSD, LCS, Duplicates, and Blanks) analysis as per method, will be performed on our sample matrix. Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be sent to SERAS 10 business days after each batch of samples. The complete data package is due 15 business days after final sample receipt. The complete data package must include all items on the deliverables checklist. The laboratory must provide documentation for individual summa canister and flow controller certification.

All sample and QC results must be summarized in a tab delimited file diskette deliverable. Units must be in ppbv and ug/m3 in the electronic deliverable.

Summa canisters and preset orifices must arrive at SERAS by January 20, 2011 <u>OR</u> the hotel in West Palm, Fla by January 24, 2011. The flow controllers should have 1/4 inch fittings.

Please submit all reports concerning this project to **Misty Barkley (732) 321-4205 or misty.barkley@lmco.com**. Any contractual question, please call Joe Rosenberger (732) 321-4215.

Sincerely,

Vinod Kansal

Analytical Support Chemist

Lockheed Martin / SERAS Project

VK:mb Attachments

CC.

V. Kansal

G. Powell

0113Con

J. Rosenberger

Subcontracting File

D. Killeen

P. Solinski

#### TO-15 Compound List for Project 0113

Requested Repo	rtina	Limit
----------------	-------	-------

Compound	(ppbv)	
Benzene	0.030	
Toluene	0.030	
m,p-Xylenes	0.030	
o-Xylene	0.030	
Ethyl benzene	0.030	
Naphthalene	0.030	







#### CHAIN OF CUSTODY RECORD Site #: 0-113

No: 0-113-01/27/11-0002

Lab: Columbia Analytical Services

Lab#	Sample #	Sub Location	Analyses	Matrix	Numb	Container	Pump #	OrificeID	Stop Pressu re	Volum e	Vol Units	Stop_Dat e	Stop_Ti me
1	1471	Unit 815 - 1 SS	VOCs TO-15 BTEX + Naphthalene	Soil Gas	1	SUMMA	AC01312	FC00572	-7	46	Liters	1/27/2011	5:39
2	1472	Unit 815 - 3 SS	VOCs TO-15 BTEX + Naphthalene	Soil Gas	1	SUMMA	AC01502	FC00492	4	5-2	Liters	1/27/2011	1626
0	1473	Unit 309 Ambient 1	VOCs TO-15 BTEX + Naphthalene	Air	1	SUMMA	AC01553	FC00302	-3	5.4	Liters	1/27/2011	1603
(4)	1474	Unit 309 Ambient 2	VOCs TO-15 BTEX + Naphthalene	Air	1	SUMMA	AC01053	FC00592	-4	52	Liters	1/27/2011	1603
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				Andrew					The same and the	The same staying			

SAMPLES TRANSFERRED FROM
Special Instructions: Please analyze for BTEX and Naphthalene as per contract with Lockheed Martin

CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
Aufgreekis	Plati	1/27/11	Wtounda	428/4	0935						
				-							<del> </del>
			1		li						







P1100363 No: 0-113-01/27/11-0003

#### CHAIN OF CUSTODY RECORD

Site #: 0-113

Lab: Columbia Analytical Services

Lab#	Sample #	Sub Location	Analyses	Matrix	Numb	Container	Pump#	OrificeID	Stop Pressu re	Volum e	Vol	Stop_Dat e	Stop_Ti
3	1475	Unit 309 CS	VOCs TO-15 BTEX + Naphthalene	Air	1	SUMMA	AC01719	FC00576	-2	56	Liters	1/27/2011	1607
(E)	1476	Unit 312 CS	VOCs TO-15 BTEX + Naphthalene	Air	1	SUMMA	AC01722	FC00440	-3	5.0	Liters	1/27/2011	1013
1	1477	Unit 805 CS	VOCs TO-15 BTEX + Naphthalene	Air	1	SUMMA	AC01047	FC00544	-3	5.4	Liters	1/27/2011	1617
8	1478	Trip Blank	VOCs TO-15 BTEX + Naphthalene	Blank	1	SUMMA	AC00731	NA	-30	0	Liters	1/27/2011	4:31:00 PM
		- dr. 1-10 1-10 1-10 1-10 1-10 1-10 1-10 1-1								************		-	
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SAMPLES TRANSFERRED FROM Special Instructions: Please analyze for BTEX and Naphthalene as per contract with Lockheed Martin **CHAIN OF CUSTODY #** 

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
suffrancy's;	Pl Sh	1/2-/1	Whalen	428/4	0935						
,											